



Drought-Tolerant Trees

*Wayne K. Clatterbuck
Associate Professor
Forestry, Wildlife & Fisheries*

Late-season droughts are common in southeastern landscapes. Many trees are stressed by prolonged periods of hot, dry weather. Selecting trees that use water efficiently without the need for frequent watering or irrigation is one way to make your landscape more resistant to droughts. With impending water shortages in many urban areas leading to prohibitions of irrigation or watering, planting trees that are more tolerant to drought conditions is the best long-term solution to a healthier, low-maintenance landscape.

A few of the factors to consider when selecting trees that use water efficiently are (Coder 1999):

- Native trees are better adapted to local soil, moisture, climate and pest conditions than non-native trees.
- Trees with small leaves (linden, elm, ash, willow oak) are more easily cooled and have better water-use efficiency than trees with larger leaves (sycamore, cottonwood, basswood).
- Upland species are usually more drought-resistant than bottomland species.
- Early successional species, those that colonize old fields and disturbed sites (pines, black locust, elms), use water more effectively than late successional species (sugar maple and beech).
- Trees with deep, upright crowns are more effective in water use than those with flat, wide-spreading crowns.
- Trees with multilayered crowns having many living branches and leaf layers (oak, ash, gum, hickory) are more water-efficient than those trees with leaf canopies



Wayne K. Clatterbuck

Sassafras is a native tree that is tolerant of poor, dry sites.



Sara Clatterbuck (both photos)

Willow oak with its narrow thin leaves and multilayered crown is an excellent drought-tolerant landscape tree.



Wayne K. Clatterbuck

Thick leaf waxes of eastern redcedar foliage assist in its drought tolerance.

that concentrate leaves in single layers along the outer edge of the crown (beech, sourwood, redbud, magnolia).

- Drought-tolerant plants usually have thick leaf waxes and bark, efficient stomatal control and extensive root systems.

Examples of a few trees that are not drought-tolerant include black cherry, dogwood, yellow-poplar, basswood, birch, buckeye and sycamore. These species respond to drought by shedding their leaves prematurely or wilting.

Although there is not an ideal drought-resistant tree for every landscape, many trees have drought-resistant features and are more tolerant of dry conditions than others. The following table lists some trees that will tolerate dry conditions once established. However, as with any new planting, they will need to be watered until they are established.

Reference

Coder, Kim D. 1999. Tree selection for drought resistance. The University of Georgia, Warnell School of Forest Resources, Athens GA. 4 p.

Trees with drought-tolerant attributes.				
Botanical Name	Common Name	Leaf Size	Crown	Leaf Wax
<i>Acer rubrum</i>	Red maple	small	oval	light
<i>Carya spp.</i>	Hickories	leaflets	rounded	light
<i>Celtis occidentalis</i>	Hackberry	small	oval	moderate
<i>Cercis canadensis</i>	Eastern redbud	large	spreading	moderate
<i>Diospyros virginiana</i>	Persimmon	medium	rounded	moderate
<i>Ginkgo biloba</i>	Ginkgo	small	pyramidal	light
<i>Gleditsia triacanthos</i>	Honeylocust	leaflets	vaselike	light
<i>Gymnocladis dioicis</i>	Kentucky coffeetree	leaflets	oval	light
<i>Ilex spp.</i>	Hollies	small (evergreen)	pyramidal	heavy
<i>Juglans nigra</i>	Black walnut	leaflets	rounded	light
<i>Juniperus spp.</i>	Junipers - eastern redcedar	evergreen	columnar	heavy
<i>Koelreutaria paniculata</i>	Golden rain tree	leaflets	rounded	light
<i>Nyssa spp.</i>	Blackgum	medium	oval	light
<i>Pinus spp.</i>	Pines — shortleaf, pitch, Virginia, eastern white, loblolly	evergreen	pyramidal	heavy
<i>Quercus spp.</i>	Oaks — chestnut, post, willow, southern red, overcup, live, Shumard, northern red, black, scarlet, bur, pin	medium	oval/rounded	moderate
<i>Rhus spp.</i>	Sumacs	leaflets	spreading	light
<i>Robinia pseudoacacia</i>	Black locust	leaflets	spreading	light
<i>Sassafras albidum</i>	Sassafras	medium	oval/rounded	light
<i>Ulmus spp.</i>	Elms	small	vaselike	moderate

Appreciation is expressed to Sam Jackson for design of this publication.
SP 570 - 15M - 12 - 00

R12 - 4910 - 21 - 002 - 01

The Agricultural Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, disability, religion or veteran status and is an Equal Opportunity Employer. COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
The University of Tennessee Institute of Agriculture, U.S. Department of Agriculture, and county governments cooperating in furtherance of Acts of May 8 and June 30, 1914.
Agricultural Extension Service Charles L. Norman, Dean

Printing for this publication was funded by the USDA Forest Service through a grant with the Tennessee Department of Agriculture, Division of Forestry. The *Trees for Tennessee Landscapes* series is sponsored by the Tennessee Urban Forestry Council.

